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(54) **CODON-OPTIMISED CRYIDA NUCLEIC ACID MOLECULE, NUCLEIC ACID CONSTRUCT, VECTOR, HOST CELL, PLANT CELL, TRANSGENIC PLANT, METHOD FOR TRANSFORMING A CELL, METHOD FOR PRODUCING A TRANSGENIC PLANT, METHOD FOR CONTROLLING INVERTEBRATE PESTS OF CROP PLANTS, AND USES OF THE NUCLEIC ACID MOLECULE**

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(57) **ABSTRACT**

The present invention relates to new codon-optimized cry1Da nucleic acid molecules from a gene sequence isolated from bacterium *Bacillus thuringiensis*. These molecules are used in the preparation of nucleic acid constructs, vectors and host cells, allowing the production of transgenic plants, such as corn, resistant to invertebrate pests, such as insects from the order Lepidoptera, particularly *Spodoptera frugiperda* (Noctuidae, Lepidoptera) and Diatrea *saccharalis* (Crambidae, Lepidoptera). Plant cells and transgenic plants comprising the molecules or constructs of the invention are also objects of the present invention. In particular, the transgenic plants according to the present invention are able to control caterpillars of the cited species that have become resistant to plants containing the cry1F gene. In addition, the present invention relates to a method for transforming a cell, a method of controlling invertebrate pests in crop plants and uses of nucleic acid molecules or constructs in the production of transgenic plants and for controlling invertebrate pests.

Specification includes a Sequence Listing.